Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of	)
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Technical and Operational Feasibility of Enabling	) PS Docket No. 06-229i
Flexible Use of the 700 MHz Public Safety	) DA 10-1877
Narrowband Allocation and Guard Band for	)
Broadband Services	)

Region 39, Tennessee, appreciates the opportunity to comment on this critical Public Safety issue. The Region 39 Regional Planning Committee is made up of State and Local government law Enforcement, Fire, EMS, EMA, Rescue, Public Works, Hospital and other agencies providing first responder and responder support across Tennessee as well as our Federal and NGO partners. Region 39 encompasses the entire state of Tennessee with a population of over six million. The FCC has asked many questions for which they are seeking comments and we submit the following comments for your consideration.

We seek comment on potential conditions or restrictions on flexible use that might be required to prevent harmful interference to narrowband operations or impairment of narrowband interoperability.

Region 39 is opposed to the mixing 700 MHz narrowband and broadband spectrum within the currently available technology. Region 39 recognizes that in the future, technology advancement may make it feasible to have both broadband and Public Safety grade voice quality and reliability. In order to prevent harmful interference to narrowband operations, a guard band is necessary and exists today between the narrowband and broadband channels.

We seek to explore the circumstances, if any, under which allowing public safety the option of flexible use of the 700 MHz narrowband allocation and guard band for broadband services would be operationally feasible and technically compatible with existing and future public safety narrowband operations, including any impact on interoperability. We seek comment on the potential level of interest in such flexible use within the public safety community, both in the short term and the long term.

Region 39 does not foresee any circumstance where mixing narrowband voice and wideband data would be beneficial to Region 39 with the current technology. However Region 39 does see the need for low power narrowband uses, 10 watts or less, within the guard band for such applications as on-scene channels, vehicular repeaters, etc.

We seek comment on these issues from the states and 700 MHz Regional Planning Committees (RPCs) that have responsibility for planning and coordination of the 700 MHz narrowband spectrum. We seek specific comment on the questions presented below, but also invite more general comment:
What is the current and anticipated use of 700 MHz narrowband networks?

How extensively are 700 MHz public safety narrowband channels—including channels licensed directly to states, channels licensed pursuant to approved RPC plans, and channels designated for nationwide interoperability—being utilized currently for public safety narrowband operations? To what extent does use of the narrowband spectrum vary by geographic area? In particular, we seek quantitative metrics (e.g., number of channels in use, percentage of jurisdictional landmass covered) that will allow us to understand better the scope and scale of existing 700 MHz public safety narrowband operations.

Within Region 39, 700 MHz P25 system currently or shortly cover about 50% of the geographical area of TN, representing over 65% of the population of Tennessee. There are approximately 82 General Use channels licensed or in the RPC process, a 3 site system soon to file for channels, and 11 State license channels operational and 11 more soon to be deployed. With a 39 million dollar Capital Improvement in the current State budget, the number of State License channels will greatly increase. The final number of sites to be deployed in the State's Phase 1 build out is still being determined. Six of the State License channels are utilized in the deployable Site On Wheels, purchased through the PSIC Grant. The PSIC grant also funded over 17 million dollars for interoperability projects in Tennessee. The primary project is a Regional Trunk system that was implemented in east Tennessee, basically from Knoxville to Chattanooga along the I-75 corridor. This are encompasses two nuclear power plant with four nuclear reactor and the DOE reservation made up of the Y-12, Oak Ridge National Laboratory and East Tennessee Technology Park. This system is now expanded into 3 North GA counties using both 800 MHz NPSPAC and 700 MHz spectrum. Blount Co TN has just announced they will be implementing 700/800 at 5 sites; two of the five will be expansion of existing P25 700 MHz sites in the Regional system and three new sites, which will also interface into the P25 switch and expand the Regional trunk system coverage. Two sites will be implemented in the Memphis UASI area as well as upgrading the state's system in Nashville to P25. Several other local governments have expressed serious interest in deploying P25 systems in both 700 MHz & 800 MHz. As we build this system of systems across Tennessee, both 700 MHz and 800 MHz spectrum is being utilize and intermingled as one system. Mixing broadband with narrowband 700 MHz could possibly negatively impact the 800 MHz channels as well, since the upper end of the 700 MHz RPC spectrum is 805 MHz and the 700 MHz and 800 MHz systems are using both as one band of spectrum.

What plans exist for future deployments of 700 MHz narrowband systems, and has funding been committed for these systems? In what timeframe are such systems expected to be placed into operation, and how much channel capacity are they

expected to use? Again, we seek quantitative metrics (e.g., dollars committed and channel utilization / geographic coverage obtained with committed dollars).

Within the next 18 month, over 55 million dollars will be spent to expand 700 / 800 MHz P25 across TN. A definite number of channels has not yet been identified, but could be 30 to 50 channels for the Department of Safety build out in eastern Tennessee and 10 – 20 channels for the state system in the Memphis UASI area. Nashville Metro is in the process of migration to P25 for their eight site simulcast system.

Are there public safety jurisdictions that are planning to deploy both 700 MHz broadband and narrowband systems in the same geographic area? If so, where? Will these systems be constructed independently or will they share infrastructure, network operations, or other resources? What information is available as to the costs of constructing separate or combined broadband and narrowband systems? Could flexibility benefit such jurisdictions by allowing them to shift spectrum from narrowband to broadband use over time?

No known broadband systems are planned due to the unknown future of 700 broadband.

Would the flexibility to offer broadband services in all or a portion of the 700 MHz narrowband spectrum and/or the guard band promote more efficient use of 700 MHz public safety spectrum?

Region 39 does not see any positives at this time for this flexibility. Our concern would be that this flexibility would introduce interference to the narrowband voice channels and waste spectrum with additional guard bands.

Are there efficiency gains that could be realized by enabling this flexibility? We do not see any benefit with the current technology, just interference. For example, could the use of the narrowband spectrum help satisfy needs for increased broadband capacity? Or could broadband spectrum help satisfy the needs for narrowband capacity over time? What would need to happen for this to occur?

A one Megahertz guard band was established one either side of the narrow band spectrum to protect the narrowband voice from the broadband. Even if an adjacent state were to use the narrowband spectrum in a broadband mode, the likelihood of interference to the narrowband is too great with the current technology.

If the Commission were to allow flexible use of 700 MHz narrowband spectrum and/or the guard band, would broadband operations in this spectrum potentially interfere with existing or future public safety narrowband operations?

Region 39 and many other Public Safety entities in 800 MHz band is currently involved in the FCC 800MHz rebanding due to Nextel's adjacent channel interference. When the FCC reallocated the 700 MHz band to accommodate broadband, a one Megahertz guard band was established to protect the narrowband channel. The one megahertz guard

band was decided after much investigation and consideration with deployed prototype systems. Why do we want to consider this when it is already established that a guard band is needed? If the FCC would allow low power devices, 10 watts or less in the guard band, then vehicular repeaters, FB2T repeaters and other equipment could be developed to help with in building coverage and in areas with little or no coverage when needed for incidents.

We specifically seek technical information on the likely extent of such interference scenarios. What steps could be taken to mitigate such potential harm? Would guard bands continue to be necessary to protect adjacent channel narrowband operations, and how would they be configured?

Guard bands would be needed and waste needed spectrum. We are already seeing an interference increase within the VHF / UHF spectrum with new digital radio systems. Many of these are 6.25 KHz compliant systems but are causing interference 100 – 150 away on both co-channel and the adjacent channel. Better propagation software and enhanced frequency coordination, possibly lower ERP on repeaters will be needed to ensure a balance in talk out verses talk back areas of coverage, so that the spectrum can be used to the fullest extent with the least amount of interference.

What interference protection criteria or coordination requirements would be necessary to allow narrowband and broadband systems to operate in adjacent spectrum in the same geographic area, or in the same spectrum in adjacent geographic areas?

Region 39 is not in favor of this proposal within the current technology confines. In the future as technology changes, as stated previously, better propagation software, ERP limitation and balanced talk out and talk back balance of power as well as continued involvement from the Regional Planning Committees.

What impact would allowing flexible use of all or a portion of narrowband spectrum have on the continued ability to support nationwide narrowband interoperability?

Could nationwide narrowband interoperability be maintained based on the existing distribution of designated interoperability channels in the 700 MHz narrowband channel plan, or would reconfiguration of the channel plan be necessary to add or shift interoperability channels to other portions of the band?

It is the opinion of Region 39 that unless a guard band between the interop channels and broadband channels were established, then the interop channels would need to be move to one end of the band away from the broadband to mitigate interference. In either scenario, public safety seems to lose. Either we lose spectrum due to guard bands or we will need to reprogram radios at cost to the agencies.

For areas that do not construct narrowband 700 MHz systems, could narrowband interoperability occur on interoperable channels on other existing public safety spectrum bands in these areas?

Region 39's concern would be an adjacent state not using their narrow band channels for voice systems, those channels being reallocated and aggregated into a broadband system causing harmful interference to existing systems in other states.

How much, if any, of the narrowband allocation and guard band should be made available for broadband operations?

Region 39 does not support any narrowband to be used for broadband at this time. The amount of guard band, if any, should be determined by technical standards for the equipment development.

Should some portion of this spectrum (*e.g.*, the upper portion of the band furthest from the existing public safety broadband spectrum) continue to be reserved exclusively for narrowband operations?

Region 39 supports that all of the current narrowband spectrum continue to be reserved for narrowband usage. At some point in the future when the technology has evolved to support public safety grade voice, then it could be revisited.

If flexibility in the narrowband spectrum were allowed, what role should the 700 MHz RPCs and the states play in its implementation?

Region 39 does not support this flexibility within today's technology. The Regional Planning committees should remain involved in a planning role. The National Regional Planning Council (NRPC) would need an expanded role working with the RPC's

What would be the appropriate jurisdictional level for deciding whether to implement flexibility? Should such decisions be made at the state or regional level?

If the Commission decides to change the current rules, then the RPC should have a voice in the decision. No matter whether it is a state or regional level, ensuring those adjacent to the state or region not be negatively impacted should be the first concern of the RPC's and the FCC.

How would decisions to implement flexibility impact the role of RPCs and existing regional plans for the 700 MHz narrowband spectrum? Should state licensees be required to make any filings?

If flexibility were allowed, all 55 Regional Plans would need to be changed. Not just the channel allotment process, but the entire Plan may need to be revisited and this would take much time. State that use the narrowband State License channels should file FCC applications to document where and how these narrowband channels are being utilized and for coordination with adjacent states within 70 miles of the site unless the signal level is below a 15 dBu level. Even if adjacent to Gen channel, then the RPC should be notified as well as any other states if the site is close to the border. A dispute resolution should be developed for the states using the State License Channels to sign to mitigate interference during the application process as well as once the site is operational.

Should states/RPCs be required to coordinate with one another regarding proposals for flexible use of the narrowband spectrum within their respective jurisdictions?

Yes if proposed site is within 70 miles of the state border or if a signal level over 15 dbu is present across the border using a standards based prorogation software. The level could possibly need to be lower than 15 dBu depending upon co-channel and adjacent channels interference.

What would be the impact of allowing flexibility on the development of broadband, narrowband, and dual-use equipment in the 700 MHz public safety spectrum?

This could be a disaster waiting to happen with the current technology.

Would allowing flexible use prior to widespread deployment in the public safety broadband allocation create incentives for the development of broadband devices and equipment capable of operating in the narrowband spectrum as well? Are there other steps the Commission could take to promote the development of such equipment?

To encourage the use of broadband, the D block spectrum could added to the 10 MHz of Public Safety spectrum to make it more enticing to manufacturers to develop products and staying away from the narrowband spectrum at this time.

What is the potential for development of dual-use equipment that could support both narrowband and broadband use? Would such equipment be software-defined and programmable to allow for ease of transition between broadband and narrowband use?

Possibly in the future. It could be programmable, software defined, but more investigation would be needed as technology evolves.

For broadband devices built to operate in the 700 MHz public safety broadband spectrum, will there be interoperability issues if these devices operate in regions that opt to deploy broadband in narrowband spectrum as well? If so, how should these issues be addressed?

I can foresee interoperability issues as well as interference issue if this were to happen without major advances in technology.

Conversely, if mobiles designed to transmit and receive broadband in the narrowband spectrum are used in regions that opt to deploy narrowband, will there be interference concerns between these devices and the narrowband network? If so, how should these issues be addressed?

Due to the guard band necessary to protect narrowband, then the only feasible way to use narrowband in an area without broadband, might could be to operate on a secondary basis unless there would be a waiver process that would involve a showing

that there is not planned usage of broadband in that area within the next ten years or so.

If the Commission were to permit flexible use of the narrowband spectrum, what if any impact should this have on the existing rules that require 700 MHz narrowband systems to narrowband to 6.25 kHz bandwidth channels by December 31, 2016? Should the Commission reconsider this requirement? Would public safety resources be better spent transitioning 700 MHz narrowband operations onto a broadband platform?

Narrow band voice is the heart of public safety for daily operation, emergencies, disasters and planned events. It would be in the Public Interest and the interest of Public Safety to move the date to at least 10 years from when the TV broadcaster actually vacated the spectrum. But with current the current economy and funding cuts, and even longer migration should be considered, such as 2024. Equipment should be manufactured that could be easily and inexpensively upgraded without having to change out an entire system.

While this inquiry is focused on the technology side, Region 39 believes that a good Governance plan must be in place prior to the deployment of a national broadband system. In the Safecom Interoperability Continuum, governance is the first lane to interoperability. There needs to be as much focus and attention on governance as there is on the technical and technology side. Governance can only come with people working together, building relationships and putting aside our differences.

At this time and within the current available technology, Region 39 can not support this proposal.

Respectfully submitted,

John W Johnson

Region 39 Chairman